# EXHIBIT

OF THE

# AFFAIRS & GEOLOGICAL REPORTS

OF THE

# Pittsburg, Maysville and Cincinnati RAILROAD COMPANY.

NOVEMBER, 1863.

ZANESVILLE, O.
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# EXHIBIT

## OF THE

# Pittsburg, Maysville and Cincinnati RAILROAD COMPANY.

The Pittsburg, Maysville and Cincinnati Railroad Company is organized under and by virtue of a special act of incorporation, passed March 2, 1849, by the General Assembly of the State of Ohio, subject to the general provisions of the "Act regulating Railroad Companies," passed February 11, 1848.

The charter of this company is perpetual, and its powers and privileges ample, to extend a line of Railroad, Eastward to the Pennsylvania State line, and Westward to Aberdeen, opposite Maysville Kentucky, and also to the city of Cincinnati. The authorized capital is $12,600,000

The stockholders design the location and construction of a railway, which, when completed, will form part of the shortest practical railway connection between Pittsburg and Wheeling on the North-East and Maysville and Cincinnati on the South-West.

The line of location is as near an air line, as is practicable for a railway between the termini of the road, as will be seen by a comparison of the located lines with air-lines.

5751 [illegible]

# Table of Distances

## FROM PITTSBURG, PENN. TO MAYSVILLE, KENTUCKY.

| | | | | |
|---|---|---|---|---|
| Pittsburg, Pa. to Steubenville, | P. M. & C. R. R. | 43 | Airline | 37 |
| Steubenville to McConnelsville, | " " | 89 | " | 81 |
| McConnelsville to M. & C. R. R. | " " | 61 | " | 57 |
| M. & C. R. R. to Maysville, Ky. | " " | 57 | " | 54 |
| | | 250 | | 229 |

An airline drawn from Maysville to Steubenville will very nearly cut McConnelsville, on the Muskingum river, the point from which the company have prosecuted their work of location and construction, both East and West.

Between the located line of this road and the Marietta and Cincinnati R. R., and the proposed line of the Marietta and Wheeling R. R. on the East, are the high ridges of the Ohio river hills. On the west between this road and the Steubenville and Indiana R. R. and Cincinnati, Wilmington and Zanesville R. R. are the Tuscarawas and Muskingum hills.—The intervening territory on either side is wholly impracticable for railway improvements.

The P. M. & C. R. R. occupies the interior basin, formed by these ranges of river hills. The line of location, following the upper streams, which, fortunately, lie in the right direction for the purposes of this company.

From the character of the country, this road will have no competitor for its local business.

This improvement will furnish the most direct and natural line of travel from central Kentucky to the North Eastern cities, through either Pittsburg or Wheeling.

The line of location cuts the Central line of the mineral region of Ohio. A full and complete account of the variety, extent, and value of the minerals on this road, will be found in the accompanying Geological Reports of Professors W. W. Mather, F. Shepherd and J. G. Blair. Since these examinations were made, the value of Petrolium has been made known, and numerous wells are in successful operation along the line of this road. Over which, when the road is finished, the product of these wells will find its way to market. Parts of the district of country through which this road is located, are among the best agricultural Districts in Ohio; as will be seen by the accompanying tables, prepared by prof. W. W. Mather late State Geologist of the State of Ohio. The P. M. & C. line of location intersects the proposed Wheeling and Medina R. R. 31 miles from Steubenville. Thence to the Central Ohio R. R. 22 miles, the heavy sections are nearly all graded. Thence to the Muskingum river, 36 miles, the work of construction has been prosecuted with great success. A continuous line of twenty miles, intersecting the Central Ohio R. R. 46 miles from Wheeling, Va., is graded and ready for the superstructure. Many other sections are wholly or partially graded.

The prosecution of the work on this line of railway, was suspended in the spring of 1857, in consequence of the general financial troubles of the country. The ruling high rates of interest for money since, have deterred the company from attempting to seek loans to carry on their work.

The total subscriptions amounted to $479,850 00, twenty per cent of which proved unavailable; mostly in consequence of the financial reverses of the country.

The books of the company show the following condition of its affairs:

McConnelsville, O. Oct. 18, 1363.

T. W. Peacock, Esq. *Pres't. P. M. & C. R. R. Co.*,

Sir:—Agreeably to your requst, 1 have examined the books of the Company, and find the cost of,

| | |
|---|---|
| Construction | $308,782 40 |
| Attorney's fees | 568 64 |
| Expense account | 3,790 91 |

| | |
|---|---|
| Engineering | 35,958 88 |
| Fencing | 1,210 08 |
| General Superintendence | 24,939 90 |
| Interest | 1,238 42 |
| Right of Way | 13,839 61 |
| Total | $390,328 84 |

That the Company has paid on account of,

| | | |
|---|---|---|
| Construction | $302,261 50 | |
| Attorneys fees | 568 64 | |
| Expense account | 3,790 91 | |
| Engineering | 35,638 19 | |
| Fencing | 1,210 08 | |
| General Superintendence | 17,247 28 | |
| Interest | 1,238 42 | |
| Right of way | 13,840 40 | |
| | | $375,839 42 |

Respectfully submitted, &c.

H. DUNSMOOR, Sec'y P: M. & C. R. R. Co.

The graded portions of this road are in as near a perfect condition as they were, when the work was suspended. The road bed is better, being now solid, and covered with a handsome sod. The stone work remains, everywhere, undisturbed and unimpaired.—The highest waters have failed to submerge any portion of the track.

In a short time the graded line might be ironed and doing a good business.

The local necessities of the people living along this line of improvement urge its construction, the most of whom have no other cheap facilities to reach the markets with their agricultural products.

The impossibility of the lines of railway, now constructed through Ohio, doing the business that has been thrown on them during the past three years, is urged in favor of the speedy completion of this work.

The military necessities of the Government demand the construction of this line of railway to shorten the connection between the military centres East and the military centres in the south-west, through Maysville, Ky. The ironing of the Maysville and Lexington railroad, and the completion of the P.M. & C. R.R. line to Maysville will shorten the distance and also the time, very considerably, of transferring men and munitions of war, from the seat of war east, to central Kentucky and Tennessee. The difference in favor of a line through Maysville, over the shortest lines through Cincinnati, from the city of Baltimore, Md. to Lexington, Ky., being 93 miles and from the cities of Philadelphia and New York, one hundred miles each, as will be seen by the following railway distances from

## NEW YORK TO LEXINGTON.

| | |
|---|---|
| Via Albany, Buffalo, Cleveland and Cincinnati, | 983 |
| " Erie R. R. Dunkirk, Cleveland & Cincinnati, | 961 |
| " Erie, Atlantic & G. W. R. R. & Cincinnati, | 947 |
| " Philadelphia, Pittsburg & Cincinnati | 857 |
| " Allentown, Pittsburg & Cincinnati | 845 |
| " Allentown, Pittsburg & Maysville, | 745 |

## PHILADELPHIA TO LEXINGTON, KY.

| | |
|---|---|
| Via Pittsburg Steubenville, Columbus and Cincinnati, | 770 |
| " Pittsburg Steubenville and Maysville. | 670 |

## BALTIMORE TO LEXINGTON, KY.

| | |
|---|---|
| Via Bellaire, Columbus and Cincinnati, | 734 |
| " Bellaire, Zanesville and Wilmington, | 719 |
| " Parkersburg and Cincinnati | 685 |
| " Parkersburgh M. & C. & P. M & C. lines through Maysville Kentucky. | 592 |

## LEXINGTON AS A MILITARY CENTRE.

From Washington city via Parkersburg and Cincinnati

| | |
|---|---|
| To Parkersburg | 415 |
| To Cincinnati | 202 |
| To Lexington | 99 |
| Washington to Lexington. | 716 |

| | |
|---|---|
| Via Parkersburg and Maysville to Parkersburg | 415 |
| To Maysville, | 144 |
| To Lexington, | 64 |
| Washington to Lexington, | 623 |

| | |
|---|---|
| Southern lines from Richmond, Va. to Knoxville | 492 |
| To Chattanooga | 110 |
| To Nashville | 151 |
| To Lexington | 185 |
| Richmond to Lexington | 938 |

## NASHVILLE AS A MILITARY CENTRE.

| | |
|---|---|
| From Washington Via Parkersburg to Cincinnatti | 617 |
| To Louisville | 137 |
| To Nashville | 185 |
| Washington to Nashville | 939 |
| From Washington via Maysville | |
| To Lexington | 623 |
| To Nashville | 185 |
| Washington to Nashville | 808 |
| Southern lines from Richmond, Va., To Knoxville | 492 |
| To Chattanooga | 110 |
| To Nashville | 151 |
| Richmond to Nashville | 753 |

The construction of the P. M. & C. railway with its Lexington and Nashville connections will reduce present railway distances:
From Washington & Baltimore cities to Lexington, Ky. 93 miles
" Philadelphia & New York 100 "

Making the railway from Washington to Lexington 315 miles less than from Richmond to Lexington.

From Washington to Nashville the railway will be reduced 131 miles and will only be 55 miles longer than from Richmond to Nashville. From Washington to Memphis the railway line will be reduced 131 miles, and will only be 80 miles longer than from Richmond to Memphis.

## CINCINNATI COAL SUPPLY.

That there is an abundance of coal along the line of this road, the several geological reports, hereto appended, abundantly demonstrate; that this coal is needed for consumption in the city of Cincinnati, the present scarcity and high prices of fuel in that city is equally conclusive.

The remaining considerations may bear a little discussion. Can a line of railway be so located as to afford the needed supply at all times? And will the road be a paying institution?

The P. M. & C. R. R. Company have expended a large sum of money for engineering, to satisfy *themselves*, and they have ascertained that a favorable line of location can be obtained making almost a continuous descending grade, from the upper valleys of the coal mountain ridge, through South Perry, near the line of Morgan and Hocking Counties, descending with the water lines till they reach the Scioto valley; thence to Cincinnati, the grades are very favorable for heavy transportation.

There are a few reasons why the Cincinnati, Wilmington and Zanesville R. R. the Marietta and Cincinnati R. R. and other professed coal roads in Ohio, do not, and cannot, afford Cincinnati the necessary supply of coal.

None of these roads were located with reference to a coal business; their locations having been controlled by commercial considerations, the convenience of county seats, or other considerations. Hence they were compelled to encounter high grades, too high for cheap coal transportation. Their necessary rates of coal carriage are so high, that when the Ohio river is navagable for coal barges, the price of coal in Cincinnati will not pay even the railway charges for its transportation.

No constructed railroad, for this reason, can ever become a coal road, even by constructing an arm to the Ohio coal fields.

The P. M. & C. R. R. line, following the descending lines of water courses, south westwardly towards Cincinnati, will be capable of moving trains of a thousand tons, while the higher graded lines are not capable of moving trains of half that weight.

High graded roads are capable of great speed, with light trains. But only low grades with very slow movement will insure cheap coal.

The rates of moving coal over roads adapted to its transportation, vary from 75 cts. to $1.50 per ton for 100 miles of transportation.

Abundance of coal can be reached by the P. M. & C. line, in connection with the proposed airline from Piketon to Cincinnati in 125 and 130 miles.

It now costs $3,00 per ton to move coal over the Ohio railroads to the city of Cincinnati.

By the construction of the P. M. & C. railway line the cost of moving coal to Cincinnati will be reduced, at first, one half, and ultimately to one dollar per ton. The opening of this improvement will bring to Cinciunati 1,000 tons per day. Estimating but 300 working days per year, the annual coal movement will be 300,000 tons.

| | |
|---|---|
| Carriage at $1,50 per ton.............................. | $450,000. |
| Operating the road........................................ | 225,000 |
| Nett........................................................... | 225,000 |

The annual nett earnings will represent a capital investment at seven per cent interest of $3,214,285,71 equal to the cost of a rail road 125 miles long, at $25,714,28 per mile.

The increased facilities of operating the road will soon supply a demand of 2,000 tons per day. Annually 600,000 tons at the reduced price of carriage to $1,00 per ton, gross $600,000, fifty per cent for operating the road $300,000, net earnings $300.000. This sum represents a capital investment, at seven per cent interest of $4,285,714,28, being the cost of 130 miles of road at $33,739,26 per mile.

It is here shown that the P. M. & C. railway affords the necessary supply of coal, and that the coal business alone will warrant its construction. There is but one other consideration in this connection.— Unless the railroad can be kept constantly employed, the coal business will be of little value, and will not warrant the necessary outlay for opening mines, buying the coal-dumping cars, and heavy locomotives, necessary to the economical transportation of coal.

Will there be a demand for all this supply of coal?

People will buy the cheapest coal. As to quality, our geologists declare the coal on the line of the P. M. & C. R. R. equal to the best. Taking the cost of furnishing coal at the mines, fixed by Prof. W. W. Mather, (see table), 3 cents per bushel. R. R. transportation at $1,60 per ton, 6 cts. per. bu. total 9 cents. Again the lowest R. R. rates at $1,00 per ton equal to 4 cents per bushel, coal mining 3 cents, total 7 cents.

Youghagheny coal mined at the rate of 4 cents per bu. Slackwater and river transportation 6 cents, total 10 cents.

At $1,50 per ton for railroad charges, the Ohio coal can undersell Pittsburg coal, one cent per bushel. At the reduced price of $1,00 per ton, R. R. charges, the Ohio coal may be sold for three cents less per bushel than the Pittsburg coal. At this last figure the Youghagheny coal will cease coming to the Cincinnati market.

The foregoing statements with the accompanying Geological reports, demonstrate the utility and value of this improvement, and the necessity for its immediate construction.

The Board feel warranted, in offering to entertain propositions for the finishing of the line already far advanced towards completion, or for their entire line by the mile or otherwise.

In behalf of the Board of Directors,

THOS. W. PEACOCK.
Pres. P. M. & C. R R. Co.

Zanesville, O. Nov. 1863.

# REPORT,

## On the Resources along the line of the Pittsburgh, Maysville and Cincinnati Rail Road.

*By Prof. W. W. MATHER, late Geologist for the State of Ohio.*

THOS. W. PEACOCK, ESQ.
*President of the P. M. & C. R. R. Co,*
SIR :

At your request, I submit the following Report on the resources that can be made available for business and profit along the line of the Pittsburgh, Maysville and Cincinnati Rail Road.

This Rail Road is to extend from the Ohio River at Aberdeen, opposite to Maysville, Kentucky, north-eastwardly through Adams, Ross, Hocking, Athens, Morgan, Muskingum, Guernsey, Harrison, and Jefferson Counties, to the Ohio River at Steubenville.

At Maysville, in Kentucky, it will be in connection with the S. W. Rail Road system; uniting at Lexington, extending west to Louisville, S. W. through Nashville to Memphis, and through Danville and McMinnville to Mobile, S. E. through Danville to Knoxville, and thence to the Southern Atlantic Cities.

The connections of this Rail Road line with the eastern, northern and western systems of Rail Roads in Ohio, is very important.

3I miles from the Ohio River at Steubenville, it crosses the proposed Wheeling & Medina R. R. line.

22 miles farther it crosses the Central Ohio R. R. in the valley of Leatherwood, 46 miles west of Wheeling.

36 miles S. W. it crosses the Muskingum River and slack water steam boat navigation, in the midst of the Salt Works at McConnelsville.

28 miles S. W, it crosses the Hocking Canal, and the proposed extension of the Parkersburg R. R. in the midst of a most extraordinarily productive coal region, extensively worked, and giving great promise also for the iron business.

33 miles S. W. it crosses the Cincinnati and Marietta R. R.

18 miles S. W. it intersects the Cincinnati & Hillsboro R. R.

2I miles from the last it crosses the proposed line from West Union to Cincinnati from Portsmouth.

I8 miles farther S. W. the line reaches the Ohio River opposite Maysville, Kentucky.

All these lines of travel and transportation are intersected nearly at right angles by the P. M. & Cin. R. R.

The Cincinnati, Cleveland and Columbus line, and the Cincinnati, Wilmington and Zanesville line, are nearly parallel lines to the P. M. & C. R. R. but are at distances from 25 to 50 miles. So also the Wheeling & Marietta R. R. and Cleveland & Pittsburgh R. R. up the Ohio River, are lines approximately parallel, but are at distances from 25 to 50 miles.

The northern terminus has important connections to Pittsburgh, and thence by the Pa. Central R. R. to Philadelphia, by Olean to N. Y, and the north.

It is thus seen that this line has highly important lines converging and concentrating on its termini, while it will serve as a feeder to, and be fed by all the numerous intersecting lines.

This Rail Road line traverses a rich agricultural region, and will have the business of the country on each side from Adams, Brown, Highland, Ross, Vinton, Hocking, Athens, Morgan, Perry, Muskingum, Noble, Guernsey; Harrison, and Jefferson counties. It passes through many towns and villages in which a considerable amount of business is done, from Aberdeen through W. Union, Piketon, Nelsonville, McConnelsville, Cumberland, Point Pleasant, Hartford, Senecaville, Washington, Winchester, Antrim, Londonderry, and Freeport.

It will have the business of a large part of seventeen counties, which exceed the average counties in Ohio in population, in wealth, in agricultural and in mineral productions.

The tables show the agricultural production, population and taxed property, value of domestic animals, and production of corn and wheat per county, exceeds the average per county, for the State. This excess exceeds 50,000 bushels of wheat per county, 300,000 bushelss of corn per county, $300,000 of taxed property per county, 600 persons in population.

There is probably no portion of the world where a Rail Road passes through such an extent of mineral region uninterrupted. Along one hundred and thirty miles of this line there are coal beds in the contiguous hills, and up the little valleys generally of such thickness and quality as to be worked, and supply coal for the local consumption of the population.

In some places along the line where coal is seen on the hill sides, and in the beds of the little streams, it has not been dug, nor even proved as to quality or thickness, and where it seems to be abundant; but along most of the line, at least 100 miles, the coal is generally used and highly esteemed. The line of this Rail Road crosses all the numerous coal beds, and any desired quality that exists in Ohio may be procured along some part of the line or in its vicinity.

## COALS OF THE HOCKING VALLEY,

The dry burning coals are found along and near the line from 5 miles N. W. of Nelsonville,on the Hocking river through Nelsonville, Monday Creek and Sunday Creek valleys, to the base of the dividing ridge of the Muskingum waters. Three of these coal seams are workable, two of which have an extraordinary development in the vicinity of the R. R. and can be made available by switches up the valleys. No other R. R. line has been laid to take advantage of, and render tributary such a vast amount of coal as this road can control by its position.

Of these dry burning coals in the Hocking Valley alone, at least 50,000 acres,with an average thickness of 6 feet, or about 10,000 tons per acre, or in the aggregate 500,000,000 tons of coal, are capable of being made tributary to this R. R. The Monday Creek coal varies from 5 to 15 feet thick, and the Sunday Creek coal from 4 to 10 feet; and 6 feet may be considered a fair average of these two beds *above water level*, though the thick Monday Creek coal doubtless underlies the whole country where the Sunday Creek coal is accessible, about 100 feet below it. Allowing the above estimate, which is believed to be reasonable, here is coal enough to furnish 10 trains per day of 200 tons each 300 days in a year (600,000 tons per year) for 833 years, while that below water level is far more abundant.

The Monday Creek coal is worked below the Sunday Creek coal at two points for salt wells, at a depth of 100 to 120 feet below, but both beds are there thinner than along the R. R. the upper line, 4 and the lower 6 feet.

## COALS OF THE MUSKINGUM VALLEY.

The coals along the R. R. line from the divide of the Hocking waters across the Muskingum and Meigs Creek in Morgan county, the Buffalo and Leatherwood forks of Wills Creek in Muskingum, Noble and Guernsey counties. Scull forks, Main fork. Brush fork and Clear fork of the Stillwater in Harrison county have all a general character, and belong to the upper coal series, are all highly bituminous, and except the cannel coals, are all coking coals and agglutinate or cement together in burning. They approximate in character the Pittsburgh or Youghagheny coal, are all associate more or less with beds of limestone in the hills.—They vary in thickness and in quality, in some places one or two of the veins are two thin to work, which in a few miles swells out to good working thickness and quality. It is perhaps sufficient to say of this coal series traversed by the R. R. line from Morganville in the west part of Morgan county, across the Muskingum and all its tributaries in Morgan, Muskingum, Guernsey and Harrison counties, that there is no place more than ten miles where there is not coal of workable thickness and quality easily accessible to the Railroad, by side tracks or by switches of 1 to 3 miles and in those places where workable coal was not seen opened, coal occurs, but has not been proved.

On the dividing ridge between the Hocking and Muskingum in Morgan county the lowest of the three coal beds associated with the limestone is opened and worked in various places, and in different places is from 2½ to 9 feet thick.

Near the Meeting House south of Wise's store, the west of the ridge it is 8 feet, and is about one mile from the Rail Road line, and 300 to 400 feet above it. From this point the limestone coal occurs on the dividing ridges in the gaps of the hills gradually descending eastward in the dividing ridges of Wolf Creek towards McConnelsville, but so thin as to be rarely worked, except for local use. At McConnelsville it is about 250 feet above the river. On the branches of Meigs Creek it is thinner and lower in the hills, and comes down to the grade in places about nine miles N. E. of McConnelsville. A great many coal banks are opened in Broom and Bristol Townships, in Morgan County, within easy reach of the Rail Road, and many more can be opened for the supply of McConnelsville Salt Works. The banks opened are three to four feet thick, of a good quality of coal.

In Meigs and Rich Hill Townships, Muskingum county the same coal occurs, together with two other beds, but only one is worked.

At and near Cumberland and westward 5 miles to the tunnel Coal abounds along the R. R. line in the hills, is of good quality and good working thickness, from 4 to 5 feet.

The coal was seen in places towards Hartford, but has not been proved, as also between Hartford and Senecaville. It is believed that the lower limestone coal worked farther W. is here below the country, and the others may be too thin to work. In the valley of Leatherwood workable coal occurs 3 to 5 feet. Along the Salt Fork of Wills Creek 3 miles N. of Washington is abundance of coal 3, 4 or 5 feet thick, covered by sandstone, like that on Leatherwood. Around Winchester, coal occurs in all the hills. Three beds are seen, only one however, is worked, and that is thin, (3 feet). Along the Scull Fork of Stillwater, and around Freeport, coal 4 to 5 and 6 feet occurs of excelent quality, overlaid by a heavy bed of sandstone.

The upper sandstone vein is 4 to 4½ and 5 feet. The lower sandstone vein is 5 to 6 and 7 feet. The 4 other limestone veins 1, 2 and 3 feet each; averaging 12 feet.

The upper coals of which we have been speaking are in several beds, but rarely is more than one workable above water level in the same hills, but one workable coal vein may be considered as available above water level within short distances of the Railroad, from Morganville to Steubenville. If we consider one fifth of the ground within 2½ miles of the R. R. on each side to be available for coal along the line from Morganville to Freeport, it would give 80 square miles of available coal of say 3 feet thick, equal to 51,200 acres, at 5,000 tons per acre 256,000,000 tons. From Freeport to Steubenville the coal may be averaged at 4½ feet thick, accessible above water level, and available over one third of the area 3 miles on each side of the road for a distance along the road of 30 miles. This would give 42,666 acres, at 7,500 tons per acre, 320,000,000 tons. The available coal on this Railroad line may be estimated as follows, viz:

| | | | | | | TONS. |
|---|---|---|---|---|---|---|
| Dry burning | coals | between | Morganville | and | Nelsonville | 500,000,000 |
| Caking | " | " | Nelsonville | " | Freeport | 256,000,000 |
| " | " | " | Freeport | " | Steubenville | 320,000,000 |
| One thousand and seventy-six millions of tons | | | | | | 1,076,000,000 |

The amount of coal estimated would require a transportation of 10 loaded trains of two hundred (200) tons each per day, three hundred days in the year, or (600,000) six hundred thousand tons per year for a period of (1,775) one thousand seven hundred and seventy-five years to remove.

Here is an amount of available fossil fuel sufficient to furnish profitable transportation for ages of time, if markets be opened for it.

The foregoing is a very low estimate when we know the fact that the Hocking coal seam underlies the Nelsonville or Monday Creek coal seam; and the latter underlies the Dover or Sunday Creek coal seam; and only one of these three coal seams, which together give from 15 to 25 feet in depth of coal, is estimated as available over the 50,000 acres in the Hocking Valley, though they are all considered available by shafts. They are all passed through by the salt wells in the Hocking Valley, and in two localities, the Monday Creek coal is mined from shafts sunk more than 100 feet below the valley, and below the Sunday Creek coal for the conveence of salt wells. Fifteen feet of coal may be considered available in the future by means of shafts from 50 to 250 feet in depth under 50,000 acres of land that may be tributary to this R. R. in the Hocking Valley or 25,000 tons per. acre or 1,250,000,000 tons. These same coal beds are supposed to underlie all the line of the R. R. from Morganville to beyond Steubenville, but have not been proved beyond the Hocking Valley.

# Table of Distances

Coals are transported to the markets where they can compete with the P. M. & C. R. R.

| Mining Districts. | Distances to the places of consumption. | | | | Cost of mini'g & delivering on cars or bo't | By what modes of conveyance. |
|---|---|---|---|---|---|---|
| | Cincinnati ... | Dayton........ | Columbus.... | Chillicothe... | | |
| | | | | | per bu. | |
| Youghagheny.................. | 500 | ..... | ... | ... | 4 | Ohio River |
| Yellow Creek.................. | 450 | ..... | ... | ... | 4 | " " |
| Wheeling ...................... | 400 | ..... | ... | ... | 4 | " " |
| Pomeroy........................ | 220 | ..... | ... | ... | 4 | " " |
| Vinton............................ | 148 | 115 | ... | 48 | 4 | Cin. & Mar. R. R. |
| Raccoon ......................... | 155 | 125 | ... | 55 | 4 | " " " |
| Nelsonville..................... | 134 | 120 | ... | ... | 3½ | P. M. & C. & Cin & M. |
| Monday Creek................ | 125 | 120 | ... | 45 | 3 | " " " " |
| Sunday Creek.................. | 130 | 125 | ... | 50 | 3½ | " " " " |
| Zanesville ...................... | 165 | 132 | 62 | ... | 4 | C. C. C & C. O. R. R. |
| Cambridge...................... | 208 | 163 | 89 | ... | 4 | " " " " |
| Coshocton ...................... | 185 | 134 | 66 | ... | 4 | S. & I. & C. O. R. R. |
| Tuscarawas ..................... | 205 | 154 | 86 | ... | 4 | " " " " |

## IRON ORES OF THE P. M. & C. R. R. LINE.

The line of this Rail Road traverses the iron belt of Ohio between Logan and Morganville. It also ranges within a few miles of the eastern skirts of the iron region of Tuscarawas county.

Large quantities of iron ore occur in the hills of Monday Creek and especially of the Snow Fork in Ward and Trimble Townships, Athens county, and in Falls and Green Townships, Hocking county. The ores in Ward and Trimble townships are connected with the coal beds, coals that are dry burning, contain but little sulphur, and are esteemed valuable for using raw in stone coal iron furnaces; and the ore is also similar to the Welch and Scotch ores used for making iron with stone coal.

These ores have attracted little attention from our iron masters, as they are different from those they are accustomed to work with charcoal, but are esteemed good for making stone pig iron, and Railroad bars.

Iron ores were seen in the hills between Winchester and Antrim in Guernsey county, and also between Antrim ane Londonderry. The former was a limestone ore in considerable quantity where oxide of iron had replaced the limestone, but as far as was seen, was local only, and was not traced to any other hill, The other ore was in kidneys near the top of the hill and this was not traced to any other hill near, but west of Winchester the same ores were seen in the hills in other places.

The iron regions of this R. R. route that will be important, is in the Hocking Valley, and when R. R. mills shall be put in operation making iron with stone coal, this will be one of the most important points. Already the reduction of iron with stone coal has been commenced, more as an experiment than as a business, and has succeeded at the Hocking furnace, on this R. R. line.

At other furnaces in Southern Ohio, the experiment has been tried and succeeded with the Jackson and other coals, and furnaces are being erected in Jackson county, (Monroe and Lick Furnaces) intending to use stone coal.

Iron is already smelted as a regular business in northern Ohio with stone coal in Stark, Mahoning, Trumbull and Columbiana counties, and largely in Pennsylvania and Maryland, and must ere long be extensively developed in the coal and iron district of Ohio, which has unequal advantages.

## LIMESTONE,

Limestone abounds along ths whole route of the P. M. & C. R. for about 160 miles.

From the Ohio to West Union, 18 miles and thence to the crossing of the Hillsboro & Cincinnati R. R. near Sinking Spring, Blue and Cliff limestone form the basis of the country.

The lower limestone of the coal formations occurs 3 miles from Logan, and beyond, across Monday and Sunday Creek valleys other beds are found.

In the high coal ridge dividing the waters of the Hocking and Muskingum, the upper limestones of the coal formation are strongly developed, in numerous beds, with intervening beds of marley shales, coal and shelly sandstones. These limestones extend eastwardly, capping the hills and lower ridges, and their strata extend throughout the hills at lower and lower levels, till they disappear to the S. E. in Olive Green and Duck Creeks; but on this R. R. line, they continue all the way in the hills through Cumberland, Senecaville, Washington, Winchester, Antrim, Londonderry, Freeport, and still on through Jefferson and Columbiana counties, everywhere producing rich productive soils, well adapted to grain, grass and corn. Although a very hilly region, the accompanying tables show that these counties are more densely populaetd, and contain more wealth, and surpasses in agricultural productions the average of the State. It is pre-eminently a wheat growing region from the Hocking Valley along this R. R. line to the Pennsylvania line. Corn is also produced in abundance. Tobacco is and and has been largely produced. Sheep and wool are produced in abundance.

The lighter colored layers of the cliff limestone make a white lime, the blue and gray limestones generally make a stony, but ash colored lime, adapted for mortars and for liming land.

Some of the layers of the Upper Coal limestone are apparently adapted for hydraulic cements, but I am not aware that they have been used as such except in Columbiana county.

## SALT.

Salt water is found in abundance in the Muskingum and Hocking valleys. McConnelsville is the centre of the salt business of the Muskingum valley. In 854 salt was made as follows:

| | |
|---|---|
| From five works in six months.......................................... | 3,300 barrels |
| From fourteen works in six months................................ | 18,696 " |
| Total.................................................................................. | 22,696 " |

The whole amount of which I have been able to get returns for 1854 is

55,296 barrels from 19 salt works of 280 lbs each equal to 142,057 bushels. There are other salt furnaces at work, but their produce is not ascertained.

There are several salt furnaces on Sunday Creek, and near its mouth at Chauncey and vicinity, and near Athens making 130,000 bu. Much of the salt of the Muskingum salt works would find its market through this Rail Road and a part of that of the Hocking valley.

There are good geological reasons for believing that salt water exists abundantly along the line of this R. R. and that from the abundance of coal that can be mined easily, that salt will be extensively made within a few years; in the valleys of Buffalo and Seneca forks of Wills Creek and in the valleys of the Still water.

*TABLE showing the Population in* 1850, *the Taxable property and production of corn and wheat in* 1852, *the acres of improved lands, the number of farms in the counties along and near, that will furnish transportation and business for the Pittsburg, Maysville and Cincinnati Rail Road.*

| COUNTIES. | Population 1850. | Taxed Property. | Improved Acres. | Number of Farms | Corn gathered in '52 | Wheat harvested in 1852. |
|---|---|---|---|---|---|---|
| Adams | 18,943 | 3,609,637 | 104,797 | 1509 | 733,024 | 258,057 |
| Brown | 27,334 | 6,914,163 | 129,006 | 1843 | 1,306,349 | 256 456 |
| Scioto | 18,729 | 4,880,913 | 51,150 | 751 | 960,762 | 38,188 |
| Highland | 25,781 | 6,963,052 | 169,513 | 2323 | 1,446,889 | 358,726 |
| Pike | 10,955 | 2,555,868 | 68,185 | 731 | 692,415 | 60,641 |
| Ross | 32,084 | 12,949,293 | 179,002 | 1435 | 2,971,500 | 327,603 |
| Vinton | 9,353 | 2,656,868 | 72,540 | 806 | 249,899 | 27,097 |
| Hocking | 14,119 | 1,958,063 | 59.709 | 1180 | 360,751 | 100,950 |
| Athens | 18,217 | 2,921,049 | 82,168 | 1379 | 516,952 | 209,653 |
| Perry | 20,774 | 4,290,626 | 103 668 | 1314 | 547,827 | 421,286 |
| Morgan | 28,593 | 4,421,223 | 133,657 | 2126 | 541,455 | 416,080 |
| Muskingum | 45,053 | 14,203,803 | 212,795 | 2680 | 1,157,183 | 801 957 |
| Noble | ........ | 2,926,332 | ......... | ...... | ............ | ......... |
| Guernsey | 30,472 | 5,361,956 | 170,632 | 2209 | 576 071 | 372,222 |
| Belmont | 34,599 | 9,262,291 | 179,697 | 2552 | 984,713 | 508,430 |
| Harrison | 20,160 | 5,856,800 | 134.298 | 1668 | 463,087 | 318 174 |
| Jefferson | 29,133 | 10,534,517 | 165,420 | 1838 | 582.844 | 411,905 |
| Total, | 374,309 | 102,994,813 | | | 14,662,859 | 5,168,048 |
| Average for counties along Rail Road | 22,645 | 6,227,489 | | | 802,483 | 304,952 |
| Average for counties except Hamilton | 22,511 | 5,851,521 | | | 660,960 | 290,040 |

It will be seen from the preceding table that the counties traversed by the P. M. &. C. R. R. and that lie near so that they will furnish business and transportation to the Rail Road, are above the average in population and in the main Staple agricultural productions, corn and wheat.

If Hamilton county be excluded, the taxed property of Rail Road line counties on the average exceeds that of the other counties of the State of $375,468 per county.

The taxed property on the Grand Duplicate for 1852, on the seventeen counties in the table is $102,994,813.

| | |
|---|---|
| Average for one County | $6,227,489 |
| The Grand Duplicate of Ohio for 1852 is | $593,396.848 |
| The Grand Duplicate of Hamilton Co for 1852 is | 84,314,491 |
| Substracting Hamilton County leaves | 509,082,357 |
| Averaging $509,082,357 among 87 counties, gives average | $5,851,521 |

Average near the line of the R. R. exceeds the general average $375,968

It will also be seen that there is an excess in the everages of the counties on and near the line of the Rail Road above the general average per county of the State as follows, viz:

| | |
|---|---|
| In population per county | 134 |
| In Corn gathered per county | 141,523 bushels. |
| In Wheat Harvested per county | 14,912 bushels |

From an examination of the table of the domestic animals it may be seen their everage value per county in the counties on and near the R. R. exceeds the general average of the counties in the State.

It will be seen from the preceeding statements in regard to the mineral resources lying dorment in the hills and along the valleys, and from the tables showing the population, wealth and production, that this Railway has the elements of business that are capable of being sources of great profit and prosperity, both to the R. R. Company and to the population along its line.

No line of Railway in this country, and probably none in the world, has such an extent and amount of coal capable of being made available, as that of the P. M. & C. R. R. W. W. MATHER.

Columbus, O. May 23d 1856.

*To the President and Directors of the Pittsburg, Maysville and Cincinnati Rail Road Company.*

Gentlemen:—During the past summer I was requested by Thomas W, Peacock, Esq., the President of your Company, to make an economic geologal survey of a railway line through the mineral regions of Eastern Ohio, parallel with the axis of the great coal basin of Ohio, combining the greatest line of mineral out crop, above the water line of the valleys and the grade of the road, with the shortest line practicable, to connect the Ohio river at Maysville, Kentucky, with the Ohio river, opposite the north-western corner of Virginia.

This survey has been completed with the following result:

These untold millions of mineral wealth to be brought to the use of the public, especially for the benefit of the city of Cincinnati, to which this mineral territory will be but an appendage—for the profit of thousands of capitalists, miners, mechanics, artisans, manufacturers and merchants, necessary for its proper distribution. while other thousands of farmers and merchants on the line of the road will be equally engaged in furnishing the necessary provisions to sustain this great multitude, depend for their development on the construction of your line of railroad.

No adequate idea can be formed of its superior importance in the extraordinary mineral resources along the line located, and in its immediate vicinity: and the ready access to the mines. The minerals may be ranked as follows: lead, clay-slate, or roofing-slate, freestone, whetstone, lime stone, burr-stone, fire-clay, salt, coal, and iron.

1.—Lead.—For twenty miles or more the line of this railroad will pass through a formation of magnesian limestone, identical with the lead bearing region of Missouri and Galena. Lead has been found in the rocks on the route, and there is good reason to expect it in large deposits as at Galena and Dubuque. In the immediate vicinity of the lead is found valuable iron ore, like that in Salisbury, Connecticut. The surfaee soil is productive and well timbered.

2.—Clay-slate, or roofing slate.

This formation will also occupy upwards of twenty miles of the line surveyed, and in all probability afford good roofing and school slate quarries.

This region abounds in excellent White Sulphur Springs, that will make some valuable watering places, equal to the Great Green Briar White Sulphur Springs of Virginia.

These Virginia Springs have for many years been the resort of the inhabitants of the more sultry regions of the South, to such an extent as to pay good interest on an investment of more than one million of dollars.

As the healthfulness of this slate region is proverbial, and its natural scenery very inviting, the Ohio Springs will no doubt receive a large number of visitors as soon as your road is in operation.

3.—SALT FORMATIONS.

This important formation is made up of marl slates and shales, similar to the great salt formation at Syracuse, New York, and that of Washington County Virginia, where a strature of salt-rock thirty six feet it thickness, has already been discovered, only seventy feet below the surface.—Large quantities of salt are manufactured in Morgan and Athens counties. Its transportation over the railway will be of considerable importance.

4.—LIMESTONE, FREESTONE, &c.

Nearly the whole line of the road limestone may be obtained for economical and agricultural purposes; also for common or hydraulic cements. There is also an abundant quantity of freestone of excellent quality for building purposes.

Hones, Whetstones, oilstones and burr mill stones of good quality, have been found along the line of the road, sufficient for a nation's wants.

5.—IRON and COAL.

But of eminently greater importance than all the rest, are the great formations of iron and coal. Stretching from the Ohio river, at the morth of Yellow Creek, along the line of your railway one hundred and fifty miles. It presents to the eye of the astonished geologist a spectacle literally unsurpassed and overwhelming.

It is utterly impossible for the mind to grasp the immensity of its value, or urge imagination up to the reality of its importance—certainly no railway in existance can afford a parallel.

This greal coal formation lies like an immense long-boat, with its axis or keel running in a line North-east and South-west, packed full with layer after layer of materials, the most precious and useful to man.

In the whole basin or boat, there are ten or twelve workable beds of good coal, and the intervening and remaining spaces are filled up with vast deposits of iron ore, limestone, sandstone, fire clay, &c., to the depth of more than one thousand feet.

In South-eastern Ohio, these various strata all dip or descen towards the South, and consequently rise as you go North. This gives free drainage at the foot of the hills, toward the South.

The hills frequently rise to the height of from eight to ten hundred feet. The Pittsburg, Maysville and Cincinnati Railroad is located along the South side of this coal mountain ridge, which divides the waters of the Hocking on the West, Moxahala river on the North and Muskingum on the East, in the long, deep valleys which fortunately run parallel with the axis of the coal basin, and consequently has these immense stores of coal and iron prodigally heaped up along its track. There, these minerals may be mined and manufactured, or sent to market with truly wonderful facility. Although there are ten or twelve workable beds of coal in the Ohio River, yet in the whole course of the river, not more than two beds can be mined to advantage in the river hills, South of Yellow Creek.

But the Pittsburg, Maysville, and Cincinnati Railway traverses boldly through these immense deposits of coal and iron ore, for the whole length of the coal basin, southward in Ohio, while the course of the river apparently forsakes them.

In travelling through ridges for the railway, the cuttings may be repeatedly made through these great coal beds, while millions of tons of excellent coal and iron repose on either side of the track.

Two miles West of Chappel Hill in Perry county North fork of Sunday Creek, the coal underlies the whole bottom of the valley and also extends above the water in the North bank in some places from eight to fourteen feet in thickness. The coal is mined at Miller's bank by stripping the sod and blasting the coal. The coal has been mined nineteen feet deep, without getting through the coal strata. This seam of coal shows itself as you travel Westward for thirteen miles distance. Above Straitsville in the valley of the Big Monday Creek, the coal appears above and below the water. Here coal has been prenetrated, it is said, to the depth of 56 feet without getting through the coal strata. Above the coal is a steep bluff where at the distance of 50 feet, another vein of coal ten feet in thickness crops out. These facts, it is supposed, gave rise to the statement made in the newspapers, not long ago, that there was a coal mountain in Perry, where the coal was 116 feet thick. About 100 feet above this last mentioned coal strata, is another most excellent strata of coal fourteen feet in thickness.

Between these coal deposits are valuable beds of fire clay and iron ore is another excellent coal bed of three feet thickness. Over these lies a bed of Sandstone, then iron ore, again limestone and a coal vein. Still higher in the ridges are found other coal beds and valuable deposits of limestone and iron ore.

The purest and best coal, is almost universally known among "coal miners" by the name of "Peacock Coal;" and as these elevated ridges produce this kind and quality of coal, in great abundance, I have named them the "Peacock Coal Mountains."

The analysis of specimens of the iron ore, taken from different places, was made by Prof. John A. Porter, Professor of Analytic Chemistry, in Yale College, Ct.

The specimens of ore taken from the valleys of Snow Fork and Monday Creek, in Ward township, of Hocking county, where the line of your road passes, averaged as follows ;

First lot, 56 20-100 per cent. pure metalic iron.

Second lot. 37 84-100 per cent. pure metalic iron.

A portion of six hundred weight of this ore, well roasted, added to four hundred weight of limestone, in hot blast furnace, is found to make a good quantity of iron.

Cincinnati, to maintain her present advancement; and secure future progress, must rapidly become an iron manufacturing city.

Nor will the intelligent citizens of Cincinnati fail to consider, that from the line of this railway track must come the great and necessary supply of fuel, nowhere else so abundant or as easily mined; while other roads barely touch the coal basin, affording but a scanty supply, this road is merged in the center of the greatest line of outcrop, and capable of yielding a supply almost without limit.

This railroad alone will render immediately available to Cincinnati, the great coal beds situated in Ward Township.* Hocking County, and the South-eastern part of Perry county, on Snow Fork, Sunday and Monday Creeks.

According to Professor Henry, one bushel of coal under a godd steam engine, may be made to perform the labor of twenty-six strong men for one day of ten hours. Every ton of coal, then, is equal to do work, to the energies of more than seven hundred men per day. The energies of countless million of men may be said to be stored in these hills.

Many of the coal beds described in this report are tee identical beds of coal with those worked on the Youghagheny, Monongahela, and Pittsburgh. It makes the best of coke, and for gas, some of the beds surpass the best imported Liverpool or Newcastle. Large quantities are now being shipped to New York, to supply the gas works of that city.

It is impossible to resist the effect of coal upon the well-being of mankind.

They are firmly established as the mighty main spring, or moving power of the world. And a nation or city without their life-giving influences, must sooner or later relapse into insignificance and barbarism.

FORREST SHEPHERD,
*Professor Economic Geology, Western Reserve Col.*, O.

HUDSON, Ohio, Sept. 22, 1854.

The following geological descriptions have been published in this connection, by consent of J. G. Blair, Esq. Professor of Natural Science in the Ohio University.

*Geological Description of the Coal and Iron Deposits in the Hockhocking, by Prof, J. G. Blair*:

"But a feature of greater interest in this road, is the beds of bituminous coal and workable iron ore found in its immediate vicinity, in Perry, Hocking and Athens counties. This coal and iron, together with their associated mineral salt, notwithstanding their hitherto imperfect development, have, through the facility afforded by the canal for their transportation, already become lucrative articles of commerce. But this laborious, very slow, and limited mode of transportation, has failed to encourage a very extensive working of these exhaustless minerals! The scale upon which this portion of the state is constructed, as well as its materials, is interesting, from its regularily and extent, to the man of science, as well as of commerce. This formation embraces the sandstone; limsetone, calcareo-siliceous, shells, iron ore, and the saline stratum, or strata, each of which appears exhaustless."

I venture the following proposition: That the mineral wealth of Ward township of Hocking county, lying immediately north and adjoining the town of Nelsonville, would abundantly justify the manufacturers of Cincinnati, alone in the construction of a railroad thence to that city.

This entire township is underlain with a heavy bed of coal, in the very best workable state. Commencing at Nelsonville, where it is now worked about seventy feet above the bed of the river; and dipping in that direction, the bituminous bed extends north, into Perry county, at a thickness of from five to eleven feet. This coal is well exposed along the ravines, and though generally regular, it sometimes presents singular outcrops.

On a small run, two miles and a little more west by north from Nelsonville, a short distance east of the road leading to Camden, is a bed of coal 2½ feet thick; 27 feet above this, higher up this run, is seen the Nelsonville bed, presenting an outcrop of fourteen feet, having the usual roof of sandstone. At this point, both above and below the coal, is a deposit of iron ore. The bed of ore above presents a thickness of three feet, and has a siliceous matrix. The ore is the usual compact, argillaceous carbonate, from eight to ten inches in thickness, and found beneath the Nelsonville coal bed wherever it is *in situ*.

At this point, as well as some others we shall name, the universal thickness of the coal bed, and the appearance of the second bituminous deposit at a short distance beneath, are irregularities arising, as is believed, from stiles or some dislocating cause. North of this point, the same bed of coal is found cropping out on Sand Run, in sections 18 and 23 from 12 to 13 feet in thickness. It may be traced along this run for a distance of nearly a mile, and of about the same uniform thickness, having beneath an equally heavy stratum of iron ore. We have rated this stratum at eight or ten inches, although it shows more than this thickness at these points.

This coal is seen again on the farm of Mr Dol'y, and also on sections 24 and 27, in a north-east direction from the former outcrop. We may trace this bituminous deposit still further north, in section 23.

In the richness of its ore—embracing both the argillaceous and calcareous strata—Ward township has no equal in Athens or Hocking counties, if any in the State. Blocks have been taken from the bed beneath the coal at Nelsonville, of several hundred pounds weight, which demonstrate the thickness of the stratum.

In a hasty calculation upon this point, made while visiting that place recently, I have set down this Iron deposit at a valuation, reckoning it at 2½ cents per ton, of over sixteen millions of dollers. Not to trace this subject farther at present, it may be important, both to those who reside in that vicinity, and to the Commonwealth of Ohio, to ask if this immense wealth—the treasure and gift of nature and nature's God—shall remain, as it has for centuries past, concealed in the bosom of the earth? Have not all of our men of business enterprise, our cities and citizens, throughout the length and breadth of the land, a common—a *material* interest—in its development?

We have the resources in iron, as well as in cotton, to hold *in perpetuo* the balance of trade against the world. It only needs to be developed and used by our internal improvements and capital.

Again, is it a small pecuniary matter for Cincinnati, whose pupulation is mostly dependent on coal for fuel for domestic, as well as manufacturing purposes, to be connected by a continuous and perpetual line of railway to these immense coal fields.

No other line of railway can reach these vast coal and iron deposits centrally, along the line of their greatest outcrop, as does the Pittsburg, Maysville and Cincinnati line, located along the head waters of Sunday Creek, to the valleys of Snow Fork and Monday Creeks, in Ward township, just at the base of the greatest line of outcrop of these immense coal deposits.

Athens, Ohio, 1854. J. G. BLAIR.

### *From the Third Annual Report of the President and Directors of the "Maysville and Lexington Railroad Company,"* 1853.

"The Pittsburg, Maysvill and Cincinnati Railroad Company was organized last December. The route between Pittsburg and Maysville has already been examined by Mr. McLeod, the chief engineer, who has made an exceedingly favorable report, and states that the railroad distances between those points will not be over 250 miles.

The distance from Lexington to Philadelphia, via Maysville and along this route will be only 670 miles. Via Cincinnati and along same route, 762 miles. Giving a difference in favor of Maysville of ninety-two miles.

"As the distance from Lexington, as a central point, to any of the Atlantic cities, via Maysville, is greatly less than via Cincinnati—these being the rival points of entry—all the imports from the North and East destined for Central Kentucky, must inevitably pass over this road; so must the larger portion of the horses, mules, cattle, and hogs destined for these markets, whether slaughtered in Kentucky or transported as live stock. The great tides of travel flowing from the North an East to the States of Kentucky, Tennessee and the South-West, along the railway lines converging upon Maysville, will of necessity pass over the Maysville and Lexington Road.

"In this view, its exceeding value and strength, can scarcely be overstated. That it will be one of the profitable roads in the West, cannot be for a moment seriously doubted by any one understanding the powerful agencies co-operating to that result. H. WALLER, President.

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